"The small elevation of *Antares*, even when on the meridian, and the consequent confusion of image, make it impossible for us to see it as a double star in these latitudes. But the sudden change in the intensity of its light at occultation may probably be observed; and a careful register of the times of change of brightness and total disappearance, or of first reappearance and full brilliancy, will give elements for a computation of the relative position and distance of the two stars.

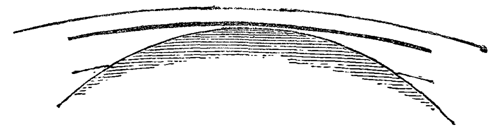
"*Royal Observatory*, 1856, *January* 1."

Observations of the Planet Saturn. By William Lassell, Esq.

"1855, *Nov. 27th.* 10^h 30^m G.M.T. Viewed *Saturn* with powers 430 and 565. Sky hazy, with hoar-frost. Planet continually disturbed by passing haze, and observation very tantalising. The shadow of the ball is seen all along the southern limb, extending into the division of the ring, and is lost in it. The ball evidently does not itself extend up to the division of the ring. The shadow seems quite flat-topped, conveying the idea that its presumed roundness is lost in the division; and if the extreme south limb of the shadow does really extend over the division, it is so faint as not to be distinguishable on the darker ring A.

"*Nov. 29th. Saturn*, about 11 P.M. was surveyed some time, but the air was worse than on the 27th. My impressions of the form and position of the shadow of the ball and the encroachment of the latter on the ring, are the same as on that occasion. On the 27th I noticed that the preceding arm of C was brown and the following grey.

"*Dec. 6th.* The division of the ring with power 565 seems quite uninterrupted all round. At the southern part the shadow of the ball comes up to it, and is lost in it; but, indeed, the southern limb of the planet becomes gradually so dark, that at its very edge it cannot be distinguished from shadow; and it is only by completing in imagination the symmetry of the ball in that part that an opinion can be formed, whether it touches the division itself, or whether there is an exceedingly narrow portion of shadow between. The sort of osculation which takes place between the shadow and the division of the ring, or between the dusky limb of the ball and the division of the ring, analogous to the *cornering* of the shadow I observed at Malta, is still plainly visible, but is to me without satisfactory explanation.



"*Dec. 12th.* Similar observations to the above were repeated.

"*Dec. 21st.* Circumstances rather unusually fine. Viewed *Saturn* about 10 P.M. with power 565. There is a very slight cornering of the shadow (?) at the south limb. The extreme south limb of the planet touches, I believe, the division. I cannot see

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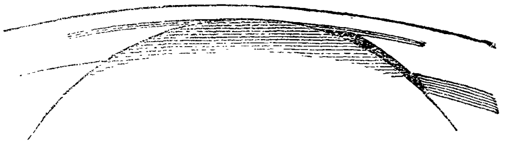
that the shadow is visible there beyond the limb, and there is certainly no encroachment of either shadow or ball upon ring A. Indeed, from the present greater elevation of the sun than of the earth above the plane of the ring, there ought to be no shadow visible. The dark ring is remarkably well shown, and certainly reaches fully half-way between the inner edge of B and the planet's limb. It is well defined at its interior edge, and the interior edge also of B is very sharp. The ruddy belt on the planet is striking, fading, however, very much away towards the limbs, which are well seen through the dark ring. The brownish yellow of the ball generally, south of the belt, and the very dark south pole, are strongly marked. The aperture of the telescope was reduced to 20 in., but the light was sensibly less, without a greater precision of image. Now that the ring is so widely open, the distance from the inner edge of B to the planet seems less than my drawings, made in October 1852 at Malta, would indicate, in proportion to the breadths of the bright rings. The bit of sky on each side of the ball is well contrasted in blackness with the dark ring, notwithstanding the proximity of the almost full moon.

"1856, *Jan. 7th.* 10 P.M. Wind east, light, and the sky very variable; generally, indeed, cloudy, but with momentary glimpses of good vision, though I doubt if the atmosphere was ever really clear. Viewed *Saturn* for some time with powers 430 and 565, watching for the finest glimpses. I am satisfied there is no shadow visible south of the southern pole, and that the south pole enters the division of the ring, passing, indeed, nearly, if not quite, through it. I receive the impression of a flattening of the ball there, or as if a bit of it were sliced off. I do not see that the ball reaches at all beyond the division, and I should best represent my conviction by saying that the southern edges of the ball and division were coincident. The shadow of the ball upon the ring is plainly seen as a narrow black line south, following the ball, principally upon the ring B, not extending to A, and faintly seen, or imagined to be seen, across C.



"The division of the ring, generally termed black, is, however, of a much less intense shade of blackness than the shadow of the ball and the portion of sky within ring C, which are both pre-eminently and intensely black, whilst the division, in comparison with them, may be termed a brown or greyish black. The angular shape of the shadow, where it touches the division, remains as in former apparitions, and also something like a notch, even on the preceding side, where there is no shadow visible. Observation very troublesome, by reason of the haze or scud constantly passing and reducing the brightness of the planet down to that of a star of the fifth magnitude; and, indeed, frequently rendering it invisible to the naked eye.

"These observations, especially touching the encroachment of

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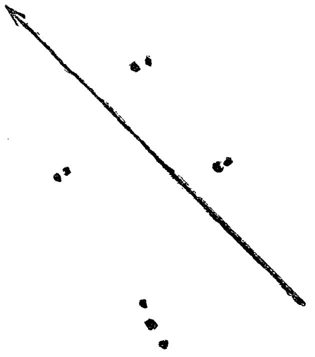
the ball upon the ring, have been made in some measure to satisfy the query of Professor Secchi, in his paper in No. 982 of the *Astronomische Nachrichten.* They do not appear to afford any evidence of oscillation of the plane of the ring. Neither have I been able to detect any want of symmetry in the form of the division. But the sky during the latter part of the autumn and winter has been remarkably unfavourable for delicate scrutiny.

"In addition to the above observations of *Saturn,* I may mention a

Remarkable Configuration of Stars

found on pointing the telescope in the neighbourhood of *Uranus.* Approximate place, hastily and rather rudely taken, R.A. $3^{\mathrm{h}}\ 13^{\mathrm{m}}$, P.D. 72° 50′. No opportunity was afforded of measuring any of the stars, or even correctly ascertaining their magnitudes. They appeared thus in the field of view with power 260:—

"The four principal stars are very bright, and of very nearly equal magnitude. The companions of the three forming the equilateral triangle are very minute, so as to form similar and extremely unequal double stars. The south following companion is a delicate object even with 24 inches' aperture. Some relation amongst them is suggested by their remarkable juxtaposition.



"*Bradstones, 9th January,* 1856."

On Occultations of Stars by Saturn. By M. Winnecke.

(*Extract of a Letter to the Astronomer Royal.*)

"You will excuse my troubling you with a remark on the subject of your note in the December Number of the *Monthly Notices,* relative to the occultation of a star by *Saturn,* which was pointed out in No. 920 of the *Astronomische Nachrichten.* I hardly think that the conjunction will result in a real occultation, since the ephemeris of *Saturn,* published in the *Nautical Almanac,* has given the declinations in recent years with far greater accuracy than the astronomical ephemeris of this place has done. Assuming the *Nautical Almanac* as the basis of computation, we find the geocentric declination of the centre of *Saturn* for the instant of conjunction in right ascension with the star $7\frac{1}{2}^{\mathrm{m}}$ to be:—

$$\delta\ \text{♄} = +22^\circ\ 14'\ 6''$$